

(12) **United States Patent**  
**Griffiths**

(10) **Patent No.:** **US 9,636,178 B2**  
(45) **Date of Patent:** **May 2, 2017**

(54) **SYSTEM AND METHOD FOR AN ARTICULATING SHAFT**

(71) Applicant: **Specialty Surgical Instrumentation Inc.**, Antioch, TN (US)

(72) Inventor: **Jerry R. Griffiths**, Norwell, MA (US)

(73) Assignee: **Specialty Surgical Instrumentation, Inc.**, Antioch, TN (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 611 days.

(21) Appl. No.: **13/705,262**

(22) Filed: **Dec. 5, 2012**

(65) **Prior Publication Data**

US 2013/0150830 A1 Jun. 13, 2013

**Related U.S. Application Data**

(60) Provisional application No. 61/567,891, filed on Dec. 7, 2011.

(51) **Int. Cl.**

**A61B 19/00** (2006.01)

**A61B 90/50** (2016.01)

**A61B 34/00** (2016.01)

**A61B 34/30** (2016.01)

(52) **U.S. Cl.**

CPC ..... **A61B 19/00** (2013.01); **A61B 90/50** (2016.02); **A61B 34/70** (2016.02); **A61B 2034/305** (2016.02)

(58) **Field of Classification Search**

CPC ..... **A61B 19/26**; **A61B 19/22**; **A61B 19/00**; **A61B 2034/305**; **A61B 34/70**; **A61B 90/50**

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,662,815 A *	5/1987	Zimmer	.....	B25J 17/0283	414/735
4,690,012 A *	9/1987	Dahlquist et al.	.....	74/490.06	
4,771,652 A *	9/1988	Zimmer	.....	B25J 17/0283	74/469
4,990,050 A *	2/1991	Tsuge	.....	B23Q 1/54	414/735
5,540,706 A	7/1996	Aust et al.			
5,761,965 A *	6/1998	Dahlquist	.....	74/490.03	
6,796,203 B2 *	9/2004	Dubrowskij	.....	74/490.05	
7,836,788 B2 *	11/2010	Kamon	.....	B25J 9/06	74/490.01

(Continued)

*Primary Examiner* — Gary Jackson

*Assistant Examiner* — Scott T Luan

(74) *Attorney, Agent, or Firm* — Hayes Soloway PC

(57)

**ABSTRACT**

An articulating shaft system includes an elongated shaft and first and second articulating components. The elongated shaft extends along a main axis and has a distal end surface that is not perpendicular to the main axis. The first articulating component is co-axial with the main axis and is positioned adjacent to the distal end surface of the elongated shaft and has a proximal end surface and a distal end surface that are not perpendicular to the main axis. The second articulating component is co-axial with the main axis and is positioned adjacent to the distal end surface of the first articulating component and has a proximal end surface that is not perpendicular to the main axis. Rotating the first articulating component around the main axis positions the first and second articulating components at an angle relative to the main axis.

**20 Claims, 6 Drawing Sheets**

